

Interactive comment on “A statistical model for sea surface diurnal warming driven by numerical weather prediction fluxes and winds” by M. J. Filipiak et al.

Anonymous Referee #1

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Authors attempted a new approach to develop a statistical model to predict diurnal warming of SST from the frequency matching method using the NWP model data.

This new approach can be a meaningful contributor to the community. However, it is very difficult to grasp the author's point with regard to the new model. There is either no explanation or no reference for the frequency matching method. It was argued that this method was used to avoid the NWP model error. The model error exists in the statistics too, so I cannot understand the argument. It is not clear at all (p. 1502) why the use of the instantaneous wind field must be used instead of the daily mean values. More systematic analyses must be provided to ensure the improved predictability of SST for

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the frequency matching method, NWP model data, and the use of the instantaneous wind field.

The empirical formulae (1) and (2) were introduced arbitrarily without any physical interpretation. The formula (1) is even dimensionally inconsistent. It is important to argue the physical meaning of (1) and (2) before evaluating empirical constants. There is no reference to other statistical models (Webster et al. 1996, Kawai and Kawamura 2003).

Why is SEVIRI used for tuning, and AMSR-E for evaluation? What is the difference between these two satellite data? Fig. 8 and 9 are interesting, but more detailed information must be provided how these results are obtained. I suggest to include the formulae of other models shown in Fig. 9.

Generally, the paper is poorly written. - English appears strange in many parts. - The first (p. 1498, l. 20) last (p.1503, l. 12) in the introduction must be moved to the conclusion. - What is 'deceedance' and 'exceedance'? - The references for the importance of diurnal variation of SST on p. 1500 are mostly unpublished sources. There are many published papers on that (e.g., Dai and Trenberth 2004, Slinger 2003). - p. 1501, l. 23; Who argued that the empirical model by Stuart-Menteth et al. (2003) gives unrealistic high amplitudes for low wind speeds.

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